



The Open Pediatric Medicine Journal

Content list available at: <https://openpediatricmedicinejournal.com>



CASE REPORT

Recurrent Hemolytic Anemia as an Inaugural Manifestation of Wilson Disease in Children: A Case Report

Ouidad Louachama*, Aicha Bourrahout, Ibtissam Khattou, Imane Ait Sab and Mohamed Sbihi

Pediatric Department B, Mother and Child Hospital, Mohamed VI Marrakesh University hospital, Marrakesh, Morocco

Abstract: Wilson disease (WD) is a disorder of copper metabolism. Liver and brain disorders are the main presentations, hemolytic anemia in WD is a rare inaugural symptom. We report a case of a child who developed recurrent hemolytic anemia associated with liver failure in the second hemolysis episode as the first manifestation of WD.

Wilson's disease is not exceptional in children with hemolytic anemia, but another differential diagnosis must be excluded.

Keywords: Wilson disease, Hemolytic anemia, Liver failure, Abdominal examination, Abdominal ultrasound, Chronic hepatitis.

Article History

Received: November 05, 2018

Revised: January 30, 2019

Accepted: February 17, 2019

1. BACKGROUND

Wilson disease is a rare genetic disorder of the copper hepatic metabolism, it results in toxicity due to the accumulation of the mineral. The hemolytic anemia is present in 17% at some point of the disease, although it is a rare initial clinical presentation.

2. CASE REPORT

An eight-year-old male child, whose parents were consanguineous, two months before he had presented hemolytic anemia only with good outcome after blood transfusion, was referred to our emergency department with generalized oedema and the second episode of hemolytic anemia.

Physical examination revealed a normal growth rate, pallor and mild icterus with facial and legs swelling. Abdominal examination showed ascities, liver and spleen were not palpable. The neurological examination was normal and the Kayser Fleischer ring was not seen on slit lamp examination. His history did not reveal the use of medicine or plants. In addition, there was no similar illness in his three siblings.

Initial investigations showed normochromic macrocytic anemia (hemoglobin: 8,7 g/dl MCV:117.3MCH:33) thrombopenia (platelets: 107 000) and 22% of reticulocytes, with a negative coombs.

Liver enzymes: ALT: alanine aminotransferase 51 U/l; AST: aspartate aminotransferase 129 U/l, liver failure with PT:

prothrombin time: 31%.

His serum electrolytes, urea and creatinine were normal, with a low level of serum albumin: 21.8 g/l and protein serum 59 g/l. An abdominal ultrasound was normal.

A serum sample was returned as having 0,10 g/L of caeruloplasmin (reference range: 0.15-0.30 g/L), using the immunoturbidimetric method, urinary copper 269 µg/24H and a diagnosis of WD was retained.

The patient's management consisted of hypercaloric-hypoproteic diet, and low copper meals. Vitamins, especially vitamin K, and lactulose were achieved. D-penicillamine was introduced progressively. Spironolactone was used to control generalized edema.

The familial screening of WD was normal.

Long-term zinc therapy was started. The improvement of liver function, with a resolution of the prothrombin time was also observed.

3. DISCUSSION

The age of diagnosis of WD in the majority of patients is between 5 and 35 years [1]. About 17% of patients at some point during the natural evolution of WD, may present hemolytic anemia; it is rare as an initial manifestation [2].

Usually, the main clinical presentations are due to hepatic (42%) or/and neurological disorders (34%) [3]. Furthermore, the hepatic signs include acute liver failure with Coombs-negative hemolytic anemia, cirrhosis, chronic hepatitis, acute hepatitis, steatosis, and asymptomatic liver biochemical abnormalities [4].

* Address correspondence to this author at the Pediatric Department B, Mother and Child Hospital, Mohamed VI Marrakesh university hospital, Morocco; E-mail: louachamaouidad@gmail.com

Rarely, Wilson's disease has been detected for the first time during an episode of acute hemolysis [3, 5, 6]. In these circumstances, the hepatic storage capacities of copper are exceeded and it is then liberated massively in the circulation, giving rise of brutal hemolysis, sometimes in the foreground [1].

Hemolytic anemia often disappears and can sometimes recur but the organ toxicity of copper, generally, is the subsequent problem, unless treated. Therefore, any hemolytic episode in a child or young adult should be considered as a case of Wilson's disease unless proven otherwise [7]. Among the most frequently found causes, acquired are usually distinguished (autoimmune or immunoallergic hemolytic anemias, Malaria access, microangiopathy thrombotic ...) from constitutional causes (anemia corpuscular, hemoglobinopathies and deficits enzyme) [8].

Of the same, Kitazawa *et al.* [9] confirmed that a possible diagnosis of WD should be considered in patients presenting a fulminant hepatic failure with signs of Coombs-negative hemolytic anemia. A well-known but delicate presentation of WD is acute or recurrent Coombs-negative hemolytic anemia with or without associated hepatic dysfunction [2].

In the present observation, the first hemolysis episode was isolated, after two months the patient presented the second one associated with an acute liver failure, which made the diagnosis of WD easy.

Laboratory investigations showed normocytic-normochromic anemia in most reports. ALT was normal, while AST was high in some of the case reports [8, 10 - 12]. These data disagree with the rest of reviewed case reports where 80% of their cases had elevated ALT and AST. Agrawal *et al.* [9] in 2011 reported that hemolysis coincides with episodes of low alkaline phosphatase and then improve. While in our case report the anemia was normochromic macrocytic and AST was not very elevated with a normal level of alkaline phosphatase.

A chelating agent (D-penicillamine or trientine) should be prescribed for symptomatic patients until stable. Trientine has fewer side effects, so it may be preferable [13].

The prognosis in Wilson's disease is excellent for patients who receive and are adherent to treatment [13].

After 18 months of progression, the child did not present any side effects of D penicillamine with improvement in liver function.

CONCLUSION

WD is uncommon in children with hemolytic anemia, but other known causes must be excluded. In this case report, we make pediatricians alert about the possibility of the presence of WD in a child over 3 years old with Coombs-negative hemolytic anemia.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

Not applicable.

HUMAN AND ANIMAL RIGHTS

No animals/humans were used for studies that are the basis of this review.

CONSENT FOR PUBLICATION

A written informed consent was obtained from the parents when they were enrolled.

CONFLICT OF INTEREST

The authors declare no conflict of interest, financial or otherwise.

ACKNOWLEDGEMENTS

Declared none.

REFERENCES

- [1] European Association for Study of Liver. EASL clinical practice guidelines: Wilson's disease. *J Hepatol* 2012; 56: 671-85.
- [2] El Raziky MS. MS, MD, Amal Ali, MD.A. El shahawy, MSc, and M. M. Hamdy. *MDJ Pediatr Hematol Oncol* 2014; 36: 173-8.
- [3] Grudeva-Popova JG, Spasova MI, Chepileva KG, Zaprianov ZH. Acute hemolytic anemia as an initial clinical manifestation of Wilson's disease. *Folia Med (Plovdiv)* 2000; 42(2): 42-6. [PMID: 11217283]
- [4] Ferenci P. Pathophysiology and clinical features of Wilson disease. *Metab Brain Dis* 2004; 19: 229-39.
- [5] McIntyre N, Clink HM, Levi AJ, Cummings JN, Sherlock S. Hemolytic anemia in Wilson's disease. *N Engl J Med* 1967; 276(8): 439-44. [http://dx.doi.org/10.1056/NEJM196702232760804] [PMID: 6018 274]
- [6] Deiss A, Lee GR, Cartwright GE. Hemolytic anemia in Wilson's disease. *Ann Intern Med* 1970; 73(3): 413-8. [http://dx.doi.org/10.7326/0003-4819-73-3-413] [PMID: 5455993]
- [7] J.M. WALSHE. The acute haemolytic syndrome in Wilson's disease a review of 22 patients. *Q J Med* 2013; 106: 1003-8.
- [8] Michel M, Lafaurie M, Noël V, *et al.* [Hemolytic anemia disclosing Wilson's disease. Report of 2 cases]. *Rev Med Interne* 2001; 22(3): 280-3. [http://dx.doi.org/10.1016/S0248-8663(00)00329-5] [PMID: 11270 271]
- [9] Kitazawa J, Kaizuka M, Kasai M, *et al.* Hemolytic crisis with fulminant hepatic failure in Wilson disease without consanguinity. *Pediatr Int* 2004; 46(6): 726-9. [http://dx.doi.org/10.1111/j.1442-200x.2004.01993.x] [PMID: 15660 875]
- [10] Agrawal AK, Haddad FG, Matsunaga A. Acute nonimmune hemolytic anemia without fulminant hepatitis in Wilson disease. *J Pediatr Hematol Oncol* 2011; 33: 163-5. [http://dx.doi.org/10.1097/MPH.0b013e3182122422] [PMID: 2132 5970]
- [11] Brouwer RE, Manten A, van Leeuwen AM, Veenendaal RA, Ringers J, van Hoek B. An adolescent with hemolytic anemia and coagulation disorders as manifestation of Wilson's disease, treated with liver transplantation. *Ned Tijdschr Geneesk* 2001; 145(7): 316-22. [PMID: 11234295]
- [12] Degenhardt S, Blomhard G, Hefter H, *et al.* A hemolytic crisis with liver failure as the first manifestation of Wilson's disease. *Dtsch Med Wochenschr* 1994; 119(42): 1421-6. [http://dx.doi.org/10.1055/s-2008-1058855] [PMID: 7956758]
- [13] Nair P. Pediatric case series of Wilson's disease. *Cur Med Res Prac* 2018.